CLAIMS

Please cancel claims 1-64. The Applicants respectfully submit new claims 65-138 as follows.

Claims 1-64 (canceled)

Claim 65 (new): A multi-point probe for testing electric properties on a specific location of a test sample, comprising:

a supporting body defining a first surface;

a first multitude of conductive probe arms, each of said conductive probe arms defining a proximal end and a distal end being positioned in co-planar relationship with said first surface of said supporting body, and said conductive probe arms being connected to said supporting body at said proximal ends thereof and having said distal ends freely extending from said supporting body, giving individually flexible motion to said first multitude of conductive probe arms;

said conducting probe arms originating from a process of producing said multi-point probe, including producing said conductive probe arms on supporting wafer body in facial contact with said supporting wafer body and removal of a part of said wafer body providing said supporting body and providing said conductive probe arms freely extending from said supporting body, and

a second multitude of conductive electrodes being positioned on second multitude of areas defined on said first surface between said first multitude of conductive probe arms, and comprising an insulating spacing between said electrodes and said conductive probe arms, said second multitude of conductive electrodes especially being suitable for active guarding.

Claim 66 (new): The multi-point probe according to claim 65, wherein said second multitude of areas are swaged in relation to the plane of said first surface of said supporting body.

Claim 67 (new): The multi-point probe according to claim 65, wherein said second multitude of areas are elevated in relation to the plane of said first surface of said supporting body.

Claim 68 (new): The multi-point probe according to claim 65, wherein said second multitude of areas are in co-planar relation with said first surface of said supporting body between said first multitude of conductive probe arms.

Claim 69 (new): The multi-point probe according to claim 65, wherein said second multitude of areas are combinations of swaged, elevated, and co-planar in relation to the plane of said first surface of said supporting body.

Claim 70 (new): The multi-point probe according to claim 65, wherein said second multitude of swaged areas undercut said first multitude of conductive probe arms on said supporting body, providing a supporting surface of said supporting body smaller than the surface of said conductive probe arms facing said supporting body.

Claim 71 (new): The multi-point probe according to claim 70, wherein said second multitude of swaged areas undercutting said first multitude of conductive probe arms are originating from a process of producing said multi-point probe, including producing said conductive probe arms on supporting wafer body in facial contact with said supporting wafer body and removal of a part of said wafer body providing said second multitude of swaged areas on said supporting body by at least one of chemical vapor deposition (CVD), plasma enhanced CVD (PECVD), electron cyclotron resonance (ECR), sputtering, mechanical grinding, etching, electron-beam lithography, atomic force microscopy (AFM) lithography and laser lithography.

Claim 72 (new): The multi-point probe according to claim 65, wherein said first multitude of conductive probe arms are unidirectional, constituting a first multitude of parallel free extensions of said supporting body.

Claim 73 (new): The multi-point probe according to claim 65, wherein said supporting body further comprises a second surface parallel to said first surface, and

said multi-point probe further comprises an additional multitude of conductive probe arms defining a proximal end and a distal end being positioned in co-planar relationship with said second surface of said supporting body, and

said additional conductive probe arms being connected to said supporting body at said proximal ends thereof and having said distal ends freely extending from said supporting body, giving individually flexible motion to said additional multitude of conductive probe arms.

Claim 74 (new): The multi-point probe according to claim 65, wherein said first multitude of conductive probe arms are in a multiple of 2, ranging from at least 2 said conductive probe arms to 64 said conductive probe arms.

Claim 75 (new): The multi-point probe according to claim 74, wherein said first multitude of conductive probe arms have 4 said conductive probe arms.

Claim 76 (new): The multi-point probe according to claim 65, wherein said first multitude of conductive probe arms have a substantially rectangular cross section defining:

the dimension of width as a distance between the lines of said rectangular cross section perpendicular to the plane of said first surface of said supporting body,

the dimension of depth as a distance between the lines of said rectangular cross section parallel to the plane of said first surface of said supporting body, and

the dimension of length as a distance from said proximal end of said conductive probe arms to said distal end of said conductive probe arm.

Claim 77 (new): The multi-point probe according to claim 65, wherein said first multitude of conductive probe arms have a ratio of said length to said width within the range of 500:1 to 5:1.

Claim 78 (new): The multi-point probe according to claim 77, wherein said first multitude of conductive probe arms have a ratio of said length to said width within the range of 50:1 to 10:1.

Claim 79 (new): The multi-point probe according to claim 78, wherein said first multitude of conductive probe arms have a ratio of said length to said width of 10:1.

Claim 80 (new): The multi-point probe according to claim 65, wherein said first multitude of conductive probe arms have a ratio of said width to said depth within the range of 20:1 to 2:1.

Claim 81 (new): The multi-point probe according to claim 65, wherein said first multitude of conductive probe arms have a ratio of said width to said depth of 10:1.

Claim 82 (new): The multi-point probe according to claim 65, wherein said first multitude of conductive probe arms have tapered elements extending from said distal end of said conductive probe arms.

Claim 83 (new): The multi-point probe according to claim 65, wherein said first multitude of conductive probe arms have pointed shaped elements extending from said distal end of said conductive probe arms.

Claim 84 (new): The multi-point probe according to claim 65, wherein said first multitude of conductive probe arms have enlarged circular elements extending from said distal ends of said conductive probe arms.

Claim 85 (new): The multi-point probe according to claim 65, wherein said first multitude of conductive probe arms have elliptic elements extending from said distal ends of said conductive probe arms.

Claim 86 (new): The multi-point probe according to claim 65, wherein said first multitude of conductive probe arms have orthogonal squared elements extending from said distal ends of said conductive probe arms.

Claim 87 (new): The multi-point probe according to claim 65, wherein said first multitude of conductive probe arms have said lengths in the range of 20 μm to 2 mm.

Claim 88 (new): The multi-point probe according to claim 87, wherein said first multitude of conductive probe arms have said lengths of 200 μm.

Claim 89 (new): The multi-point probe according to claim 65, wherein said first multitude of conductive probe arms have a separation of distal ends of said conductive probe arms in the range of 1 μm to 1 mm.

Claim 90 (new): The multi-point probe according to claim 89, wherein said first multitude of conductive probe arms have a separation of distal ends of said conductive probe arms in the range of 20 μm to 60 μm.

Claim 91 (new): The multi-point probe according to claim 65, wherein said supporting body is of a ceramic material.

Claim 92 (new): The multi-point probe according to claim 65, wherein said supporting body is of a semiconducting material.

Claim 93 (new): The multi-point probe according to claim 92, wherein said semiconducting material comprises at least one of Ge and Si.

Claim 94 (new): The multi-point probe according to claim 93, comprising:

a first conductive layer positioned on said multitude of conductive probe arms; and

a second conductive layer acting as said electrodes on said supporting body between said first multitude of conductive probe arms.

Claim 95 (new): The multi-point probe according to claim 94, wherein said conductive layer comprises at least one conductive material taken from the group of Au, Ag, Pt, Ni, Ta, Ti, Cr, Cu, Os, W, Mo, Ir, Pd, Cd, Re, conductive diamond and metal silicides.

Claim 96 (new): The multi-point probe according to claim 65, further comprising:

a third multitude of conductive tip elements extending from said distal end of said first multitude of conductive probe arms; and

said conductive tip elements originating from a process of metallization of electron beam depositions on said first multitude of conductive probe arms at said distal ends thereof.

Claim 97 (new): The multi-point probe according to claim 96, wherein each of said third multitude of conductive tip elements comprises a primary section and a secondary section, said conductive tip elements being connected to said conductive probe arms through respective primary sections thereof and said secondary sections defining free contacting ends.

Claim 98 (new): The multi-point probe according to claim 97, wherein each of said primary sections defines a first axial direction, said first axial direction constituting an increase of separation between said supporting body and said free contacting ends.

Claim 99 (new): The multi-point probe according to claim 98, wherein said first axial direction of said primary section constitutes a decrease of separation between said free contacting ends of said third multitude of conductive tip elements.

Claim 100 (new): The multi-point probe according to claim 99, wherein said first axial direction of said primary section constitutes a decrease of separation between adjacent said free contacting ends of said third multitude of conductive tip elements.

Claim 101 (new): The multi-point probe according to claim 100, wherein each of said secondary sections defines a second axial direction, said second axial direction constituting an increase of separation between said supporting body and said free contacting ends.

Claim 102 (new): The multi-point probe according to claim 101, wherein said second axial direction of said secondary section constitutes a decrease of separation between said free contacting ends of said third multitude of conductive tip elements.

Claim 103 (new): The multi-point probe according to claim 102, wherein said second axial direction of said secondary section constitutes a decrease of separation between adjacent said free contacting ends of said third multitude of conductive tip elements.

Claim 104 (new): The multi-point probe according to claim 103, wherein said first axial direction of said primary sections extends parallel to the plane defined by said first surface of said supporting body.

Claim 105 (new): The multi-point probe according to claim 104, wherein said first axial direction of said primary sections extends in a direction converging towards the plane defined by said second surface of said supporting body.

Claim 106 (new): The multi-point probe according to claim 105, wherein said second axial direction of said secondary sections extends parallel to the plane defined by said first surface of said supporting body.

Claim 107 (new): The multi-point probe according to claim 105, wherein said second axial direction of said secondary sections extends in a direction converging towards the plane defined by said second surface of said supporting body.

Claim 108 (new): The multi-point probe according to claim 107, wherein the number of conductive tip elements in said third multitude is equal to the number of conductive probe arms in said first multitude.

Claim 109 (new): The multi-point probe according to claim 107, wherein the number of conductive tip elements in said third multitude is less than the number of conductive probe arms in said first multitude.

Claim 110 (new): The multi-point probe according to claim 107, wherein the number of conductive tip elements in said third multitude is greater than the number of conductive probe arms in said first multitude.

Claim 111 (new): The multi-point probe according to claim 107, wherein the number of conductive tip elements in said third multitude is divisible by 2.

Claim 112 (new): The multi-point probe according to claim 107, wherein said third multitude of conductive tip elements have a separation of said free contacting ends of said conductive tip elements in the range of 1 nm to 100 nm.

Claim 113 (new): The multi-point probe according to claim 107, wherein said third multitude of conductive tip elements have a separation of said free contacting ends of said conductive tip elements in the range of 2 nm to 50 nm.

Claim 114 (new): The multi-point probe according to claim 107, wherein said third multitude of conductive tip elements have a separation of said free contacting ends of said conductive tip elements in the range of 5 nm to 20 nm.

Claim 115 (new): The multi-point probe according to claim 107, wherein each of said conductive tip elements define an overall length as distance between said distal ends of conductive probe arms and said free contacting ends of said conductive tip elements, said overall length being in the range of 100 nm to 100 μm.

Claim 116 (new): The multi-point probe according to claim 115, wherein said overall length is in the range of 500 nm to 50 μm

Claim 117 (new): The multi-point probe according to claim 115, wherein said overall length is in the range 1 μm to 10 μm.

Claim 118 (new): The multi-point probe according to claim 107, wherein each of said conductive tip elements defines a diameter, said diameter being in the range of 10 nm to 1 μm.

Claim 119 (new): The multi-point probe according to claim 118, wherein said diameter is in the range of 50 nm to 500 nm.

Claim 120 (new): The multi-point probe according to claim 107, wherein said third multitude of conductive tip elements consist primarily of carbon.

Claim 121 (new): The multi-point probe according to claim 120, wherein said third multitude of conductive tip elements further include a concentration of contaminants.

Claim 122 (new): A multi-point testing apparatus for testing electric properties on a specific location of a test sample, comprising:

(a) means for receiving and supporting said test sample;

(b) electric properties testing means including electric generator means for generating a test signal and electric measuring means for detecting a measuring signal;

(c) a multi-point probe, comprising:

(i) a supporting body;

(ii) a first multitude of conductive probe arms positioned in co-planar relationship with a surface of said supporting body, and freely extending from said supporting body, giving individually flexible motion of said first multitude of conductive probe arms; and

(iii) said conducting probe arms originating from a process of producing said multi-point probe including producing said conductive probe arms on supporting wafer body in facial contact with said supporting wafer body and removal of a part of said wafer body providing said supporting body and providing said conductive probe arms freely extending from said supporting body;

(iv) a second multitude of conductive electrodes being position on second multitude of areas defined on said first surface between said first multitude of conductive probe arms, and comprising an insulating spacing between said electrodes and said conductive probe arms, said second multitude of conductive electrodes especially being suitable for active guarding,

(v) said multi-point probe communicating with said electric properties testing means; and

(d) reciprocating means for moving said multi-point probe relative said test sample so as to cause said conductive probe arms to be contacted with said specific location of said test sample for performing said testing of electric properties thereof.

Claim 123 (new): The multi-point testing apparatus according to claim 122, wherein said electric properties testing means further comprises means for electric properties probing of said test sample.

Claim 124 (new): The multi-point testing apparatus according to claim 123, wherein said reciprocating means further comprises holding means for said means for said multi-point probe.

Claim 125 (new): The multi-point testing apparatus according to claim 124, further comprising means for positioning said holding means across said test sample and recording of a location of said holding means relative to said test sample.

Claim 126 (new): The multi-point testing apparatus according to claim 125, wherein said means for positioning comprises maneuverability in all spatial directions, being directions co-planar to said test sample and directions perpendicular to said test sample.

Claim 127 (new): The multi-point testing apparatus according to claim 126, wherein said means for positioning further comprises means for angular movement of said holding means, such as to provide angular positions for said means for said multi-point probe.

Claim 128 (new): The multi-point testing apparatus according to claim 127, wherein said means for positioning further comprises means for angular movement of said holding means along an axis parallel to surface of said test sample, such as to provide angular positions for said means for said multi-point probe.

Claim 129 (new): The multi-point testing apparatus according to claim 128, wherein said means for positioning further comprises means for angular movement of said holding means along an axis perpendicular to surface of said test sample, such as to provide angular positions for said means for said multi-point probe.

Claim 130 (new): The multi-point testing apparatus according to claim 129, wherein said means for positioning further comprises means for sensing contact between said test sample and said means for said multi-point probe.

Claim 131 (new): A method of producing a multi-point probe comprising the following steps:

producing a wafer body;

producing a first multitude of conductive probe arms positioned in co-planar and facial relationship with said wafer body;

removing a part of said wafer body for providing said conductive probe arms freely extending from said non-removed part of said wafer body constituting a supporting body from which said conductive probe arms extend freely;

wherein a second multitude of conductive electrodes being positioned on second multitude of areas defined on said first surface between said first multitude of conductive probe arms, and comprising an insulating spacing between said electrodes and said conductive probe arms, said second multitude of conductive electrodes especially being suitable for active guarding; and

producing a third multitude of conductive tip elements extending from said distal end of said first multitude of conductive probe arms.

Claim 132 (new): The method according to claim 131, wherein the technique of applying the conductive probe arms in co-planar and facial relationship with the supporting wafer body involves at least one of microfabrication technique, planar technique, CMOS technique, thick-film technique, and thin-film technique.

Claim 133 (new): The method according to claim 132, wherein the technique of applying the third multitude of conductive tip elements extending from said distal end of said first multitude of conductive probe arms involves metallization of electron beam depositions.

Claim 134 (new): The method according to claim 133, wherein said producing of said third multitude of conductive tip elements comprises steps:

(a) mounting of multi-point probe having said first surface of supporting body parallel to horizontal on to holding means in a microscope chamber;

(b) selecting angles α and β describing inclination of said primary section and said secondary section of said conductive tip elements, respectively;

(c) measuring of deposition rate by focusing an electron beam in one location for 5 minutes and measuring the resulting length of a first deposition;

(d) tilting and rotating said holding means to give a field of view of said first deposition from an viewing angle identical to angle of said electron beam showing accordance with said selected angles α and β;

(e) depositing a length on one of said distal ends of said conductive probe arms;

(f) tilting and rotating said holding means to give a field of view of position for a second deposition;

(g) depositing said length on neighboring said distal end of said conductive probe arms;

(h) repeating steps c through g until separation of conductive probe arms is approximately 100 nm greater than the indented separation of conductive probe arms;

(i) selecting an angle $\alpha 1$ describing a inclination of said secondary section;

(j) tilting and rotating said holding means selecting $\beta=0$ and selecting an $\alpha=\alpha 1$;

(k) extending said secondary sections in continuation of said primary sections; and

(l) ensuring that the depositing progresses by alternating the position of the electron beam on first and second deposition.

Claim 135 (new): The method according to claim 131, wherein said third multitude of conductive tip elements originate from a process of tilted electron beam deposition.

Claim 136 (new): The method according to claim 131, wherein said third multitude of conductive tip elements originate from a process of perpendicular electron beam deposition.

Claim 137 (new): The method according to claim 131, wherein said third multitude of conductive tip elements originate from a process of a combination of tilted electron beam deposition and perpendicular electron beam deposition.

Claim 138 (new): The method according to claim 131, wherein said metallization of said third multitude of conductive tip elements originates from a process of in-situ metallic deposition.

Claim 139 (new): The method according to claim 131, wherein said metallization of said third multitude of conductive tip elements originates from a process of ex-situ metallic deposition.